(No Model.) 2 Sheets—Sheet 1.

C. A. SNIDER.

CENTRIFUGAL DRYING AND FILTERING MACHINE.

No. 569,677. Patented Oct. 20, 1896.

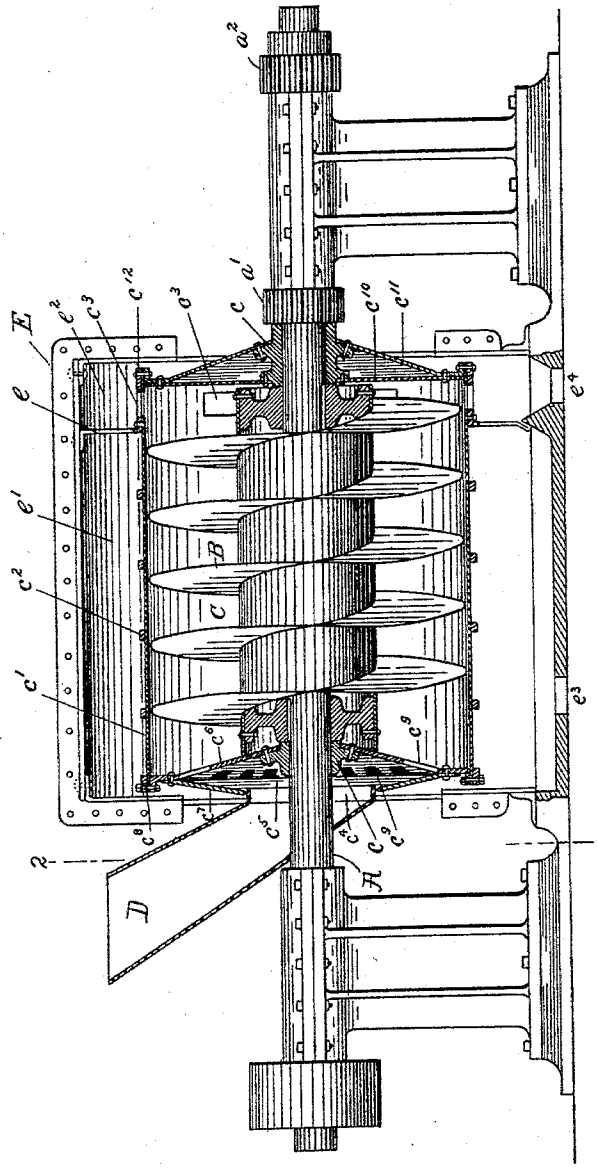

FIG. 1

Witnesses.
F. Griswold
Helen M. Hutchison

Inventor.
Clarence A. Snider
By E. L. Thurston
his atty

(No Model.) 2 Sheets—Sheet 2.

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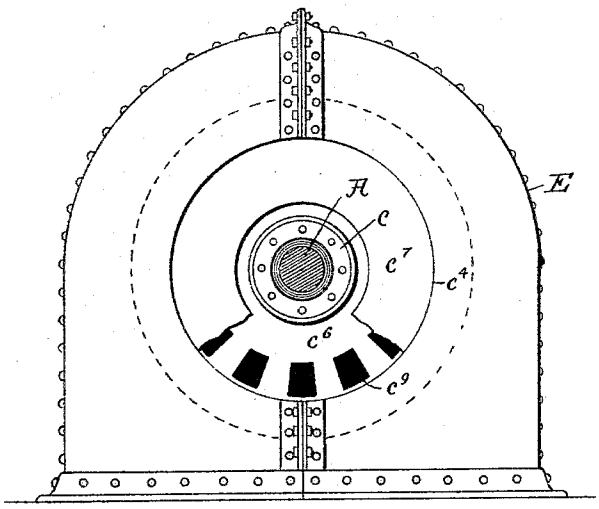

Fig. 2

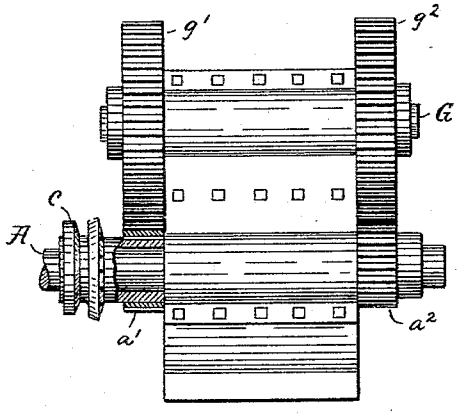

Fig. 3

Witnesses.
L. Griswold
Helen M. Hutchison.

Inventor.
Clarence A. Snider
By E. L. Thurston
his atty.

UNITED STATES PATENT OFFICE.

CLARENCE A. SNIDER, OF CLEVELAND, OHIO.

CENTRIFUGAL DRYING AND FILTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,677, dated October 20, 1896.

Application filed November 30, 1895. Serial No. 570,669. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE A. SNIDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Centrifugal Drying and Filtering Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in centrifugal drying and filtering machines which are adapted to perform their functions continuously and indefinitely without being stopped—in other words, machines into which the wet material to be dried may be fed, and from which the dried material and the moisture will be automatically discharged into separate receptacles while the machine is in motion.

The invention consists in the construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a central longitudinal vertical sectional view of a machine embodying my invention. Fig. 2 is a transverse vertical sectional view thereof on line 2 2 of Fig. 1, a part of the false end being broken away; and Fig. 3 is a plan view of the mechanism preferred for transmitting motion from the driving-shaft to the drum.

Referring to the parts by letter, A represents a shaft which is mounted in suitable bearings.

B represents a screw conveyer secured to the shaft and inclosed in the drum C.

C represents a perforated drum having the hubs *c c*, which are loosely mounted upon the shaft A. The term "perforated drum" as herein used is a generic expression indicating any drum of which the cylindrical body part c' is provided with holes through which the liquid part of the contained matter may pass, but which will not permit the escape of the solid part of said material. It may be made of perforated sheet metal or of any other suitable material. It is preferably strengthened by the externally-placed rings c^2, and it will preferably be lined with a fine wire-cloth of any suitable construction. Near one end of this drum the large peripheral discharge-openings c^3 are formed, and by large openings I mean of such size as will permit the escape of the dried solid material.

At the other or feed end the drum is provided with an axial feed-opening c^4, through which the wet material may be introduced, by means of a fixed chute D, into what may be termed a "V-shaped annular pocket" c^5. This pocket is formed by the dish-shaped end piece c^6, concave on its outer side, and the oppositely-bent dish-shaped false end piece c^7. The outer edges of both of these end pieces are preferably united to the end of the body of the drum through the ring c^8, to which all are riveted. The inner part of the end piece c^6 is secured to the adjacent hub *c*. An annular series of holes c^9 are formed in the end plate c^6 at the apex of the V-shaped pocket.

The other end of the drum is suitably closed, preferably by the plate c^{10} and the dish-shaped false end c^{11}, both of which are connected with the drum, through the ring c^{12}, at their outer edges and with the adjacent hub *c* at their inner edges.

Differential driving mechanism is provided for revolving the drum and conveyer simultaneously. In the construction shown two gears a' a^2 are secured to one of the hubs of the drum and to the shaft A, respectively, and they mesh with the two gears g' g^3 on a supplemental shaft G. These gears are relatively proportioned to produce the differential movement of said drum and conveyer. Preferably the conveyer revolves six to ten times per thousand faster than the drum. I do not intend to limit my invention to this particular differential driving mechanism, because any other well-known means for effecting the result may be substituted for it.

A casing E incloses the drum, and it is provided with an internal partition-flange *e*, the inner edge of which lies as close as practical to the outer periphery of the drum. This partition divides the space between the drum and casing into two chambers e' e^2, of which the first receives the discharged liquid and the other the discharged dried material. The chamber e' is provided with a discharge-opening e^3, through which the liquid may be drawn off, and the chamber e^2 is also provided with means for withdrawing the dried material

therefrom. The means may be simply an opening e^4 in the bottom of the said chamber.

In operation the drum is revolved at a very rapid rate. The wet material is fed through the chute D into the pocket c^5, from which it is carried through the holes c^9 into the drum by centrifugal force. The screw conveyer draws the material slowly along from the feeding end to the discharge end of the drum. The centrifugal force throws the liquid out into the chamber e'. By the time the material has reached the discharge-openings it is thoroughly dried, and this dried material is thrown out through large openings c^3 in the periphery of the drum into the chamber e^2, from which it may be withdrawn through the opening c^4. This operation may be continued indefinitely without stopping the machine.

Having described my invention, I claim—

1. In a centrifugal drying and filtering machine, the combination of a revoluble perforated drum, having large peripheral discharge-openings near one end, and an annular V-shaped pocket at the other end, which pocket has an axial feed-opening, and a series of openings to the drum near the apex of said pocket, a screw conveyer in said drum, and differential driving mechanism for said drum and conveyer, substantially as and for the purpose specified.

2. In a centrifugal drying and filtering machine, the combination of a shaft, a drum having (1) hubs which are mounted on the shaft, (2) the perforated body part having the large peripheral discharge-openings near one end, and (3) the dish-shaped end plate with openings to the drum, and an oppositely-bent dish-shaped false end piece with an axial feed-opening, a screw conveyer fastened to the shaft within the drum, and differential driving mechanism for said shaft and drum, with an inclosing casing having the internal partition-flange, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE A. SNIDER.

Witnesses:

E. L. THURSTON,

HELEN M. HUTCHISON.